

1.1 MONITORING PROGRAM OBJECTIVES

The major objectives of the Monitoring Program outlined in the Municipal Stormwater Permit are to:

- Assess compliance with the Los Angeles County Municipal Stormwater Permit No. CAS004001.
- Measure and improve the effectiveness of the Stormwater Quality Management Plans (SQMPs).
- Assess the chemical, physical, and biological impacts of receiving waters resulting from urban runoff.
- Characterize stormwater discharges.
- Identify sources of pollutants.
- Assess the overall health and evaluate long-term trends in receiving water quality.

Ultimately, the results of the monitoring requirements should be used to refine the SQMP for the reduction of pollutant loadings and the protection and enhancement of the beneficial uses of the receiving water in the County of Los Angeles. The Monitoring Program was developed to address these objectives, and has several elements:

- Core monitoring, which includes mass emission, water column toxicity, tributary, shoreline, and trash monitoring.
- Regional monitoring, which included estuary sampling and bioassessment; and three special studies, which included the New Development Impacts Study in the Santa Clara Watershed, the Peak Discharge Impact Study, and the Best Management Practice (BMP) Effectiveness Study. All of these studies were completed by 2008.

1.2 MONITORING PROGRAM STATUS

The 1994-1995 storm season was the first for which stormwater monitoring was required under the 1990 Los Angeles County National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit (No. CA0061654). Automated and manual samplings were conducted to characterize stormwater quality and quantity during the 1994-1995 and 1995-1996 seasons.

The 1996-1997 season was the first storm season in which stormwater monitoring was conducted under the 1996 Municipal Stormwater Permit (No. CAS614001). Under the 1996 Municipal Stormwater Permit, the scope of the Monitoring Program was expanded to incorporate further data collection through the mass emission, land use, and critical source monitoring programs, and new pilot studies, such as Wide Channel and Low Flow analyses.

Under the 2001 Municipal Stormwater Permit (No. CAS004001) adopted on December 13, 2001, the Monitoring Program eliminated land use and critical source elements and focused on core monitoring, regional monitoring, and three special studies. Due to varying compliance dates for each element, only mass emission, water column toxicity, and shoreline monitoring under the core Monitoring Program were addressed in the 2001-2002 Monitoring Report.

The 2002-2003, 2003-2004, 2005-2006, 2006-2007, 2007-2008, and 2008-2009 Monitoring Reports address:

- Core Monitoring Program: mass emission, tributary, water column toxicity, shoreline, and trash monitoring.
- Regional Monitoring Program: estuary sampling and bioassessment and the results of the three special studies.

An Integrated Receiving Water Impacts Report was created in 2004-2005 that also incorporated results, analysis, and progress of the above-mentioned Monitoring Programs. That report also looked at trends for the period 1994-2005. Annual Stormwater Monitoring Reports can be found on our website at: http://dpw.lacounty.gov/wmd/NPDES/report_directory.cfm.

1.2.1 Core Monitoring

1.2.1.1 Mass Emission Monitoring

The objectives of mass emission monitoring are:

- Estimate the mass emissions from the Municipal Separate Storm Sewer System (MS4).
- Assess trends in the mass emissions over time.
- Determine if the MS4 is contributing to exceedances of water quality standards by comparing results to applicable standards in the Water Quality Control Plan for the Los Angeles Region (Basin Plan), the California Toxics Rule (CTR), and with emissions from other discharges.

Seven mass emission monitoring sites: Ballona Creek (S01), Malibu Creek (S02), Los Angeles River (S10), Coyote Creek (S13), San Gabriel River (S14), Dominguez Channel (S28), and Santa Clara River (S29), were utilized to achieve the objectives outlined above during the 2008-2009 reporting period. Mass emission stations capture runoff from major County watersheds that generally have heterogeneous land use. All mass emission sites, except the Santa Clara River site, are equipped with automated samplers with integral flow meters for collecting flow-composite samples.

Sampling at the Santa Clara River station began during the 2002-2003 storm season. Although sample collections at the Santa Clara River station are performed manually, composite samples are achieved primarily by using flow rate estimates obtained by monitoring staff following approved methods. When conditions allow, flow rates are obtained using real-time flow measurements by a County of Los Angeles Department of Public Works' (Public Works) Water Resources Division stream gage near that site.

A minimum of three storm events (including the first storm event of the year) and two dry weather events were sampled at each mass emission site. Grab and composite samples were collected for five storm events at all mass emissions site, except for the Santa Clara River site (four storm events were sampled, both grab and composite) and the Los Angeles River site (composite samples were collected at four events and grab samples were collected at five events). Total Suspended Solids (TSS) were collected from the four storm events sampled at the Santa Clara River mass emission site. Ten storm events at Ballona Creek, Malibu Creek, the Los Angeles River, the San Gabriel River and Dominguez Channel, and eleven storm events at Coyote Creek were sampled for TSS. Refer to Appendix K – Table of Monitoring Events – for dates of wet and dry weather sampling events.

1.2.1.2 Water Column Toxicity Monitoring

The objectives of water column toxicity monitoring are to evaluate the extent and causes of toxicity in receiving waters and to modify and utilize the SQMP to implement practices that eliminate or reduce sources of toxicity in stormwater. Composite samples were taken at the mass emission monitoring stations. Two wet weather events and two dry weather events were analyzed for toxicity at each mass emission site during the 2008-2009 season.

1.2.1.3 Tributary Monitoring

The objectives of tributary monitoring are to identify subwatersheds where stormwater discharges are causing or contributing to exceedances of water quality standards, and to prioritize drainage and subdrainage areas that need management actions.

A minimum of four storm events (including the first storm event of the year), and one dry weather event, were sampled at the tributary monitoring stations. Sampling for the 2008-2009 season was conducted at six tributary monitoring stations in the Dominguez Channel Watershed. The tributaries monitored included Project No. 1232 (TS19), PD 669 (TS20), Project Nos. 5246 & 74 (TS21), PD 21-Hollypark Drain (TS22), D.D.I. 8 (TS23), and Dominguez Channel at 116th Street (TS24). Automatic flow weighted composite samples were taken from each tributary location. Grab samples were also taken at these locations. A total of five storm events and three dry weather events were monitored at all six tributary sites. Refer to Appendix K – Table of Monitoring Events – for dates of wet and dry weather sampling events.

1.2.1.4 Shoreline Monitoring

The City of Los Angeles is required to monitor shoreline stations. The purpose is to evaluate the impacts to coastal receiving waters and the impacts to recreational

beneficial uses resulting from stormwater/urban runoff. Also, the Municipal Stormwater Permit requires the City of Los Angeles to annually assess shoreline water quality data and submit it to the Principal Permittee for inclusion in the monitoring report. The City of Los Angeles' assessment is included as Appendix D of this monitoring report.

1.2.1.5 Trash Monitoring

The objectives of trash monitoring are to assess the quantities of trash in receiving waters after storm events and to identify areas impaired for trash. Visual observations of trash were made and a minimum of one photograph at each mass emission station was taken after four storm events, including the first storm event.

Permit required trash compliance monitoring for Ballona Creek and Los Angeles River Watersheds is described in Appendices I and J, respectively.

1.2.2 Regional Monitoring

The Los Angeles County Flood Control District (LACFCD) is participating in regional monitoring programs. These programs address public health concerns, monitor trends in natural resources and near shore habitats, and assess regional impacts from stormwater pollutant sources. The regional programs include the following:

1.2.2.1 Estuary Sampling

The LACFCD has participated in the coastal ecology committee of the Bight 2003 project coordinated by the Southern California Coastal Water Research Project (SCCWRP). The goal of this study was to supplement the regional monitoring of the SCB estuarine habitats by sampling estuaries for sediment chemistry, sediment toxicity, and benthic macro invertebrate diversity to determine the spatial extent of sediment fate from stormwater, and the magnitudes of its effects. All reports pertinent to the Bight 2003 Project have been completed by SCCWRP and were released on their website in the Summer of 2007. Their website is www.sccwrp.org/regional/03bight/03docs.html.

1.2.2.2 Bioassessment

Bioassessments aid in evaluating a water body's qualitative integrity through the detection of biological responses and trends resulting from exposure to pollution within watersheds. An ultimate goal is to identify probable causes of impairment not detected by chemical and physical water quality analysis. The LACFCD typically performs stream bioassessments in the County of Los Angeles in October every year as required in Section II.G of the Monitoring and Reporting Program of the Municipal Stormwater Monitoring Permit. However, in 2008, bioassessment monitoring was performed in June (for San Gabriel River watershed) and in November (for all other watersheds) instead of October. Sampling sites are spread throughout each of the six major watersheds and are selected to represent the diverse environments of the Los Angeles region. Table 1-1 lists the sampling station locations and Figure 1-1 is a map showing the geographical location of the sampling stations. In 2008, bioassessment monitoring was conducted at 17 sites.

The State's Surface Water Ambient Monitoring Program will take information gathered from the biological surveys in the County and combine it with data collected from surrounding counties to refine an index of biological indicators for the Southern California region. The final report for the most recent year of the Bioassessment Monitoring Program (2008) is included in Appendix H.

1.2.3 Special Studies

The LACFCD has conducted the following special monitoring programs as required by the 2001 Municipal Stormwater Permit:

1.2.3.1 New Development Impacts Study in the Santa Clara Watershed

The objective of the New Development Impacts Study in the Santa Clara Watershed was to evaluate the effectiveness of the Standard Urban Stormwater Mitigation Plan (SUSMP) BMPs at reducing pollutants in stormwater runoff. To perform this study, the Environmental Protection Agency's (EPA's) Storm Water Management Model was used to conduct a deterministic hydrological modeling coupled with a stochastic Monte Carlo approach for modeling stormwater runoff water quality. The New Development Impact Study Report was completed and submitted to the Regional Water Quality Control Board on April 7, 2008.

1.2.3.2 Peak Discharge Impact Study

This study was conducted to fulfill the requirement to develop numeric criteria for peak flow control by assessing the potential cause and effect relationships between urbanization in watersheds and stream erosion in the County. SCCWRP and the LACFCD jointly conducted the study through a consultant contract. The study results were previously reported. An Executive Summary can be found in Appendix B of the 1994-2005 Integrated Receiving Water Impacts Report.

1.2.3.3 BMP Effectiveness Study

Sampling of all BMPs in the BMP Effectiveness Study was completed in the 2006-2007 season.